

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

NICHIA CORPORATION,)	
)	
Plaintiff,)	
)	C.A. No. 19-1388-RGA
v.)	
)	
GLOBAL VALUE LIGHTING, LLC,)	
)	
Defendant.)	
)	
)	

JOINT CLAIM CONSTRUCTION BRIEF

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August 18, 2020

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<i>Vitronics Corp. v. Conception, Inc.</i> , 90 F.3d 1576 (Fed. Cir. 1996)	7

TABLE OF EXHIBITS

JA Exhibit No.	Abbreviation	Description
1.	Tanda '734 Patent	U.S. Patent No. 9,752,734 (the "Tanda '734 Patent")
2.		9,752,734 Patent File History Excerpt 2016-12-02 Response Under 37 CFR §1.111
3.	Niki '101 Patent	U.S. Patent No. 7,804,101 (the "Niki '101 Patent")
4.		7,804,101 Patent File History Excerpt 2008-01-11 RCE and Amendment Submitted with RCE 2009-04-23 Amendments Under 37 CFR 1.116
5.	Niki '191 Patent	U.S. Patent No. 6,870,191 (the "Niki '191 Patent")
6.	Tamemoto '791 Patent	U.S. Patent No. 9,324,791 (the "Tamemoto '791 Patent")
7.		9,324,791 Patent File History Excerpt 2015-10-08 Amendment Under 37 CFR §1.111
8.	Tanizawa '493 Patent	U.S. Patent No. 6,337,493 (the "Tanizawa '493 Patent")
9.	Yamazoe '297 Patent	U.S. Patent No. 7,345,297 (the "Yamazoe '297 Patent")
10.	Wetzel Decl.	Declaration of Dr. Chistian M. Wetzel in Support of Nichia's Opening Claim Construction Brief ¹
11.	Grigoropolous Decl.	Declaration of Dr. Costas Grigoropoulos in Support of Nichia's Opening Claim Construction Brief ²

¹ The following paragraphs address the disputed terms: ¶¶ 84-107 (Tanda '734 Patent: the "transparent" terms); ¶¶ 121-136 (Tanda '734 Patent: "first set of light emitting element chips . . . second set of light emitting element chips"); ¶¶ 144-149 (Niki '101 Patent: "cross sections of the protruding portions taken along planes orthogonal to the surface of the substrate are convex in shape").

² The following paragraphs address the disputed terms: ¶¶ 106-121 (Tamemoto '791 Patent: "isolated processed portions").

JA Exhibit No.	Abbreviation	Description
12.		Print out from www.lexico.com – “transparent”
13.		Print out from www.meriam-webster.com – “transparent”
14.		U.S. Patent No. 6,316,785 (“Nunoue”)
15.		Ko et al., “Patterned substrates enhance LED light extraction,” <i>LED Magazine</i>
16.		McGraw-Hill Dictionary of Scientific and Technical Terms (6th ed. 2003) “transparent”
17.		Print out from www.meriam-webster.com – “convex”
18.		<i>Transparent, Dictionary of Optometry and Visual Science</i> (7th ed. 2009)
19.		’734 Patent File History Excerpt, September 2, 2016 Non-Final Rejection
20.		Google search for “stably growing face”
21.		E. Fred Schubert, <i>Light-Emitting Diodes</i> Chp. 26 (3rd ed. 2018)
22.		Chambouleyron et al., “Optical Properties of Dielectric and Semiconductor Thin Films,” <i>Handbook of Thin Films Materials</i> Chp. 12 (H.S. Nalwa ed., 2001)
23.		Ko et al., “Highly transparent sapphire micro-grating structures with large diffuse light scattering,” <i>Optics Express</i> vol. 19, 15574-83 (2011)
24.		Hiramatsu et al., “Facets Formation Mechanism of GaN Hexagonal Pyramids on Dot-Patterns via Selective MOVPE,” <i>MRS Proceedings</i> vol. 395, 267-71 (1996)
25.		Li et al., “Growth behavior of ammonothermal GaN grown on nonpolar and semipolar HVPE GaN seeds,” <i>CrystEngComm.</i> vol. 21, 4874-79 (2019)

JA Exhibit No.	Abbreviation	Description
26.		Yang et al., “InGaN/GaN multiple quantum wells on selectively grown GaN microfacets and the applications for phosphor-free white light-emitting diodes,” <i>Reviews in Physics</i> , 101-19 (2016)
27.		Bryant et al, “Quasi-equilibrium crystal shapes and kinetic Wulff plots for gallium nitride grown by hydride vapor phase epitaxy,” <i>Journal of Crystal Growth</i> vol. 369, 14-20 (2013)
28.		Wortis, Michael, “Equilibrium Crystal Shapes and Interfacial Phase Transitions,” <i>Chemistry and Physics of Solid Surfaces VII</i> 367-405 (R. Vanselow et al. eds., 1988)
29.		Tsao, Jeffrey Y., “Surface Morphology,” <i>Materials Fundamentals of Molecular Beam Epitaxy</i> Chp. 6, 201-85 (1993)
30.		<i>Handbook of Crystal Growth</i> vol. 1, Chps. 1, 5-7 (Tatau Nishinaga ed., 2nd ed. 2015)
31.		Sereka, Robert F., “Equilibrium and growth shapes of crystals: how do they differ and why should we care?” <i>Cryst. Res. Technol.</i> vol. 40, 291-306 (2005)
32.		Yeu, et al., “Equilibrium crystal shape of GaAs and InAs considering surface vibration and new (111) B reconstruction: ab-initio thermodynamics,” <i>Sci. Rep.</i> vol. 9:1127, 1-8 (2019)
33.		Barkema, et al., “Equilibrium Crystal Shapes,” (Feb. 11, 1995) , http://www.lassp.cornell.edu/sethna/CrystalShapes/Equilibrium_Crystal_Shapes.html
34.	Second Wetzel Decl.	Second Declaration of Dr. Chistian M. Wetzel in Support of Nichia’s Reply Claim Construction Brief ³

³ The following paragraphs address the disputed terms: ¶¶ 8-12 (Tanda ’734 Patent: the “transparent” terms); ¶¶ 13-17 (Tanda ’734 Patent: “first set of light emitting element chips . . . second set of light emitting element chips”); ¶ 18 (Niki ’101 Patent: “cross sections of the

JA Exhibit No.	Abbreviation	Description
35.		Additional Excerpts from E. Fred Schubert, <i>Light-Emitting Diodes</i> (3 rd ed. 2018)

protruding portions taken along planes orthogonal to the surface of the substrate are convex in shape”).

I. PLAINTIFF'S INTRODUCTION

This case concerns light emitting diode (“LED”) technology. The claim construction disputes involve six patents covering the use of LEDs in a light bulb (the Tanda '734 Patent), as well as the structure of the LED chip, or die, within LED packages (the remaining patents).

There are 20 terms in dispute.⁴ Of those, 13 do not require construction, as the plain and ordinary meaning of those terms provides the necessary specificity and clarity. Nichia's constructions for the remaining terms are likewise consistent with the terms' plain and ordinary meanings from the vantage point of one skilled in the art, and in view of the patents' intrinsic record. The record is also clear that Nichia has not acted as its own lexicographer or otherwise disclaimed the full scope of these terms. Accordingly, the Court should enter Nichia's constructions, and reject GVL's attempts to re-write the scope of the terms in dispute.

II. DEFENDANT'S INTRODUCTION

For the reasons detailed herein, the Court should adopt GVL's proposed claim constructions and reject Nichia's proposed claim constructions.

III. PLAINTIFF'S REPLY INTRODUCTION

In its Responsive Brief, GVL agreed with Nichia's position for 15 of the 20 terms originally in dispute. The proper construction of five claim terms remains in dispute. For each of the remaining terms, GVL's proposed construction is simply an attempt to add extraneous limitations to the claims, which is improper. While there are substantial legal and factual defects

⁴ In its Responsive Brief, GVL agreed with Nichia's position for 15 of the 20 terms originally in dispute. Also, the dispute for 1 term is now moot, as the claim which recites that term is not being asserted. Thus, the meaning of 4 terms remains in dispute. Only those sections of the parties claim construction briefs addressing the 4 remaining terms in dispute are included in the Joint Claim Construction Brief.

with the limitations GVL seeks to add to the claims, there are two overarching errors in GVL's constructions. First, GVL fails to consider the meaning of the disputed claim terms *to a POSITA*. Instead, it relies on generic or lay definitions taken out of context, inserts limitations where a POSITA would find none, and argues that common terms in the field are actually "coined" in the patent. Second, GVL either fails to address the intrinsic evidence entirely or misconstrues it, and relies on extrinsic evidence instead. Its constructions are divorced from the specifications of the Patents-in-Suit, and inconsistent with the plain language of the claims.

IV. AGREED-UPON CONSTRUCTIONS

Claim Term	Agreed-Upon Construction
"wherein each of the metal plates crosses the support lead" (Tanda '734 Patent)	"wherein each of the metal plates extends across one of the support leads"
"a wavelength conversion member formed unitarily with a transparent member that seals the plurality of light emitting element chips" (Tanda '734 Patent)	"a unitary member that serves as both a transparent member and a wavelength conversion member and that covers and is in contact with the plurality of light emitting element chips"
"a pitch of the protruding portions" (Niki '101 Patent)	"a minimum distance from among the distances between the centers of neighboring protruding portions"
"configured so that light generated in said plurality of semiconductor layers is emitted from said ohmic electrode or from said substrate" (Niki '101 Patent)	"configured so that light generated in the plurality of semiconductor layers is transmitted through said ohmic electrode or said substrate"
"regular triangle" (Niki '101 Patent)	"a triangle comprising three sides of equal length"
"regular hexagon" (Niki '101 Patent)	"a hexagon comprising six sides of equal length and having equal angles"

Claim Term	Agreed-Upon Construction
“wherein said substrate comprises sapphire, protruding portions are formed in a repeating pattern within substantially an entire surface of the substrate” (Niki ’101 Patent)	“wherein the substrate comprises sapphire, and a plurality of sapphire substrate portions protrude from the surface of the substrate and form a repeating pattern over substantially the entire surface of the substrate”
“said protruding portions are formed so as to scatter or to diffract light generated in said plurality of light semiconductor layers” (Niki ’101 Patent)	no construction necessary, plain and ordinary meaning
“the protruding portions are formed so as to define a triangle as the repeating pattern” (Niki ’101 Patent)	“the protruding portions are formed in a repeating pattern , in plan view, and the repeating pattern has the shape of a triangle”
“areas surrounding the protruding portions are filled in with at least one of the semiconductor layers so as to prevent cavities from being formed around the protruding portions” (Niki ’101 Patent)	no construction necessary, plain and ordinary meaning
“the protruding portions are formed so as to prevent crystal defects from occurring in the plurality of semiconductor layers” (Niki ’101 Patent)	no construction necessary, plain and ordinary meaning
“said recess and/or protruding portion contacts with said semiconductor layers” (Niki ’191 Patent)	“said recess and/or protruding portion is in contact with said semiconductor layers”
“a side face of said recess and/or protruding portion is inclined to a laminating direction of said semiconductor layers” (Niki ’191 Patent)	“a side face of said recess and/or protruding portion is inclined relative to a laminating direction of said semiconductor layers”
“taper angle [of said side face of said recess or protruding portion]” (Niki ’191 Patent)	“the angle formed between the primary surface of the substrate and the side face of the recess or protruding portion”
“at least one recess and/or protruding portion for scattering or diffracting light generated in said semiconductor layers” (Niki ’191 Patent)	no construction necessary, plain and ordinary meaning

Claim Term	Agreed-Upon Construction
“said recess and/or protruding portion is in a form that prevents crystal defects from occurring in said semiconductor layers” (Niki ’191 Patent)	no construction necessary, plain and ordinary meaning
“electrode formed on a surface of the top layer of said semiconductor layers” (Niki ’191 Patent)	no construction necessary, plain and ordinary meaning
“links adjacent ones of the processed portions” (Tamemoto ’791 Patent)	“extends between adjacent ones of the processed portions”
<p>“the processed portions and the irregularity face are formed within a range of at least 10% and no more than 80% of a thickness of the substrate”</p> <p>and</p> <p>“the processed portions and the irregularity face are formed within a range of no more than 40% of the thickness of the substrate”</p> <p>(Tamemoto ’791 Patent)</p>	<p>“the processed portions and the irregularity face comprise at least 10% and no more than 80% of a thickness of the substrate”</p> <p>and</p> <p>“the processed portions and the irregularity face comprise no more than 40% of the thickness of the substrate”</p>
<p>“from said n-side contact layer between said n-side contact layer and said active layer”</p> <p>and</p> <p>“from the side of an n-side contact layer between said n-side contact layer that has an n electrode and an active layer”</p> <p>(Yamazoe ’297 Patent)</p>	<p>“from said n-side contact layer, wherein the n-side layers are formed between said n-side contact layer and said active layer”</p> <p>and</p> <p>“from said n-side contact layer, wherein the n-side layers are formed between said n-side contact layer and an active layer, and wherein said n-side contact layer has an n electrode”</p>

V. DISPUTED CONSTRUCTIONS

A. Tanda '734 Patent: the “transparent” terms

<u>Plaintiff’s Proposed Construction</u>	<u>Defendant’s Proposed Construction</u>
“a bulb that allows light to pass through” “the board is configured to allow light to pass through” [“a member that allows light to pass through”]	(transparent) “transmitting light without appreciable scattering so that objects lying beyond are seen clearly and distinctly”

1. Plaintiff’s Opening Position

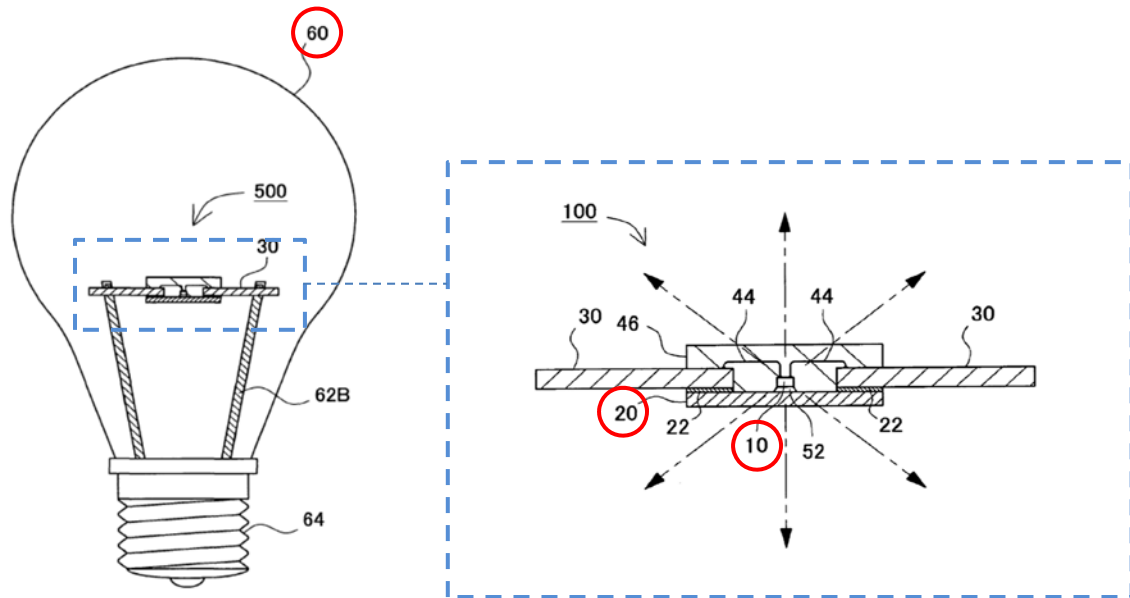
Nichia’s construction is consistent with how a person of ordinary skill in the art (POSITA) would understand “transparent” in view of the claims and specification. *See* Wetzel Decl. (JA-10) ¶ 86. In the context of the Tanda’734 Patent, a transparent bulb is a “bulb that allows light to pass through,” a transparent board is a “board ... configured to allow light to pass through,” and a transparent member is “a member that allows light to pass through.” This is a straightforward construction that the jury will understand and that experts and the Court will be able to apply.

The Tanda ’734 patent is directed to “a light emitting device,” such as an LED light bulb. Specifically, the Tanda ’734 Patent is directed to efficient extraction of light from the LEDs:

[I]t is possible to provide broad light emission even ... where the light emitting device is oriented in any directions. It is important to optimize elimination of a member that cuts off light from the LED chip, that is, to bring the LED chip closer to a suspended state inside a light emitting apparatus such as transparent bulb ***so that light emitted through all the peripheral surfaces of the LED chip can effectively outgo***. This construction can provide a light emitting device that serves as a suitable lighting apparatus capable of illuminating a wide area.

9:5-25 (emphasis added); 3:53-56 (“[I]n order to facilitate outgoing of light ... the lower surface of the transparent board 20 is a non-smooth surface. In this case, light can easily outgo through

the lower surface”); *see also* Wetzel Decl. ¶¶ 66-71 (summarizing patent). FIG. 10 of the patent (annotated, below left) shows one embodiment of the invention, and FIG. 1 (annotated, below right) shows an exemplary light emitting element that can be used in the light bulb of FIG. 10:



The Tanda '734 Patent explains that, with its claimed invention, LEDs (10) are mounted on a transparent board (20), allowing light to emit “through a wide area” and out of “transparent bulb 60.” '734 Patent, 3:5-25, 8:4-9:25.

Nichia’s construction is consistent with the plain and ordinary meaning of “transparent” as consistently used throughout the patent—the “bulb,” “member,” and “board,” are all configured to allow “light to pass through.” *See* Wetzel Decl. ¶¶ 85-86. This is consistent with the invention’s purpose of allowing a broad transmission of light, as opposed to prior art devices that inhibited light in certain directions. *Id.*; '734 Patent, 3:30-4:3, 4:22-26, 8:45-9:54; 14:33-46.

In contrast, GVL’s construction appears to be based on extrinsic evidence, rather than the claims, or even the specification. *See* JA-12, at 2 (<https://www.lexico.com> - “allowing light to pass through so that objects behind can be *distinctly seen*”); JA-13, at 2 (www.merriam-webster.com - “having the property of transmitting light *without appreciable scattering so that*

bodies lying beyond are seen clearly). This is not a correct approach to claim construction – the intrinsic record is of primary importance. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1315–19 (Fed. Cir. 2005). Usually the specification “is dispositive; it is the single best guide to the meaning of a disputed term.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

Here, nothing in the intrinsic record links the word “transparent” to “without appreciable scattering” or the relative visibility of “objects lying beyond.” Rather, the ’734 Patent is about emission of light (*i.e.*, passing light through the board and bulb). *See, e.g.*, ’734 Patent, 3:30-4:3, 8:45-9:25, 9:44-54, 14:33-46, FIGs. 1, 4; Wetzel Decl. ¶¶ 88-104. Indeed, an embodiment uses a “**transparent** board” with a “non-smooth surface” to improve light distribution, and the non-smooth surface would both cause scattering and reduce visibility. ’734 Patent, 3:53-59 (emphasis added); Wetzel Decl. ¶¶ 101-103. Moreover, GVL’s construction is unworkable, as it creates uncertainty in the scope of the claim. Subjective terms like “appreciable” or “clearly and distinctly” will not be helpful to the Court, a jury, or the experts as they attempt to apply the claim language to accused products, and will just lead to disputes down the road. The purpose of claim construction is to clarify, not confuse the meaning of the claims. *Cf. O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

2. Defendant’s Answering Position⁵

The parties’ dispute boils down to whether “transparent” should be interpreted to mean **transparent**, as GVL contends, or **translucent**, as Nichia effectively contends. It is commonly understood that “**transparent** implies being *so clear that objects can be seen distinctly*,” while

⁵ The term “transparent” appears in several locations in the asserted claims, including but not limited to “transparent bulb,” “transparent member,” and a “board configured to be transparent.”

“**translucent** implies the passage of light **but not a clear view** of what lies beyond.” See *Terlep v. Brinkmann Corp.*, 418 F.3d 1379, 1384 (Fed. Cir. 2005) (citing *Int’l Rectifier Corp. v. IXYS Corp.*, 361 F.3d 1363 (Fed. Cir. 2004)). GVL’s construction, which is consistent with both the technical and colloquial understanding of “transparent,” is limited to structures that “transmit light without appreciable scattering so that objects lying beyond are seen clearly and distinctly,” like a clear window. Nichia’s construction impermissibly expands the term to encompass structures “allowing light to pass through” in any manner and would, therefore, include translucent structures that do not necessarily provide a clear view, like a frosted window.

In the context of another LED patent, the Federal Circuit has previously decided this debate in GVL’s favor. Namely, in *Terlep v. Brinkmann Corp.*, 418 F.3d 1379 (Fed. Cir. 2005), the Federal Circuit held that the correct definition of “transparent” was **verbatim** consistent with GVL’s proposed construction here. *Id.* at 1384. Specifically, the Federal Circuit affirmed that the district court “correctly construed the term ‘clear’ to mean ‘**transparent** or having the property of **transmitting light without appreciable scattering so that bodies lying beyond are seen clearly.**’” *Id.* (emphasis added). As here, the opposing party “argu[ed] that the term should be construed to also cover **translucent** [structures].” *Id.* (emphasis added). However, the Federal Circuit refused to depart from the accepted definition of the term, because “nothing in the claims or the written description warranted giving the term . . . an expansive meaning that would cover ‘translucent’ [structures].” *Id.* So too here, it is inappropriate to depart from the accepted meaning of “transparent,” and the term should be construed as “transmitting light without appreciable scattering so that objects lying beyond are seen clearly and distinctly.”

Indeed, there is no dispute that Nichia’s proposed construction is contrary to the accepted meaning of “transparent.” Nichia’s brief concedes that dictionaries consistently define

“transparent”—in line with GVL’s proposed construction—to require sufficient light transmission to allow objects to be seen through a structure:

- “allowing light to pass through so that objects behind can be *distinctly seen*” *Supra* at 6 (citing JA-12 at 2 (lexico.com)) (Nichia’s emphasis).
- “having the property of transmitting light *without appreciable scattering so that bodies lying beyond are seen clearly*” *Supra* at 6-7 (citing JA-13 at 2 (merriam-webster.com)) (Nichia’s emphasis).

Technical dictionaries further confirm this definition. For instance:

- “transmits light without scattering and with little absorption, **so that objects can be seen through it**”
JA-18 (*Transparent, Dictionary of Optometry and Visual Science* (7th ed. 2009)) (emphasis added).

Accordingly, the accepted meaning of “transparent” is limited to structures through which objects may be clearly seen. *Terlep*, 418 F.3d at 1384 (“District courts are authorized to rely on . . . dictionaries . . .”).

Nichia criticizes consideration of the accepted definition as inappropriate because “the intrinsic record is of primary importance.” *Supra* at 7. But to overcome the accepted meaning of a term, the intrinsic record must provide either (1) clear lexicography or (2) clear, consistent teachings to the contrary. *See, e.g., Abbott Labs. v. Torpharm, Inc.*, 156 F. Supp. 2d 738, 744 (N.D. Ill. 2001) (“This is not a case where [patentee] has acted as its own lexicographer Accordingly, the court construes [the claim term] according to its generally accepted definition”). Here, the specification, provides neither. First, Nichia expressly concedes that “Nichia has not acted as its own lexicographer.” *Supra* at 1. Second, the specification offers no suggestion that “transparent” should be redefined to mean “translucent.” To the contrary, the specification expressly distinguished these terms, explaining that a certain resin used in the disclosed device could be “transparent *or translucent*.” JA-1 (Tanada ’734 Patent) at 1:48-51. Given this express distinction in the *specification*, it is all the more evident that the patentee’s choice to *claim only*

“transparent” structures is meaningful. *See, e.g., Allergan, Inc. v. Teva Pharms. USA, Inc.*, Case No. 15-CV-1455, 2016 U.S. Dist. LEXIS 171886, at *69 (E.D. Tex. 2016) (“That distinction in the specification between cyclosporin A and [cyclosporin B through I] makes it clear that cyclosporins B through I are excluded from the scope of the claim term ‘cyclosporin A.’”). Further, the GVL’s construction is the most consistent with the purpose expressed in the specification. As Nichia concedes, “the invention’s purpose [is] allowing a broad transmission of light, as opposed to prior art devices that inhibited light . . .” *Supra* at 6. Given that a transparent structure provides the broadest possible transmission of light, it necessarily serves this function better than a translucent structure, which transmits only a subset of light.

Recognizing that the specification does not actually support its construction, Nichia attempts to invert the law, arguing that “nothing in the intrinsic record links the word ‘transparent’ to . . . the relative visibility of ‘objects lying beyond.’” *Supra* at 7. That is, according to Nichia, “transparent” should not be construed as “transparent” because the specification does not affirmatively state the obvious. But the patentee did not need to expressly define the term “transparent” for it to receive its *accepted definition*. Rather, the patentee only needed to expressly redefine the term if it wished to *depart from the accepted definition*. The patentee’s choice not to do so only reinforces that “transparent” should be construed consistent with the existing definition of the term.

Finally, Nichia complains that GVL’s construction somehow “creates uncertainty in the scope of the claims.” *Supra* at 7. But to the contrary, as Nichia’s own dictionaries demonstrate—and common sense confirms—GVL’s construction merely accords with the universal definition of “transparent.” Jurors are fully capable of discerning whether or not they can clearly see an object through a structure, just as they can plainly distinguish between a clear window and a

frosted window. Accordingly, consistent with GVL’s proposed construction, “transparent” should be construed as “transmitting light without appreciable scattering so that objects lying beyond are seen clearly and distinctly.”

3. Plaintiff’s Reply Position

GVL starts from the proposition that there is one acceptable definition of transparent—based on a prior court decision construing the term “clear,” and inapplicable dictionaries—and then places the burden on Nichia to demonstrate why this extrinsic evidence is not controlling. GVL’s proposed construction and its argument are incorrect as a matter of law and incorrect factually. Nichia’s construction is consistent with the intrinsic evidence and GVL’s construction is not. *E.g., supra* at 6-7; Wetzel Decl. ¶¶ 88, 101-103.

Notwithstanding the weight of the intrinsic evidence, or perhaps because of it, GVL rests its theory on two irrelevant pieces of extrinsic evidence. GVL relies primarily on a prior Federal Circuit case that supposedly “previously decided this debate in GVL’s favor.” *Supra* at 8. GVL also points to dictionary definitions, including the Dictionary of Optometry and Visual Science. As explained below, GVL’s conclusion that there is only one accepted definition of transparent, and that this definition is the one used in the Tanda ’734 Patent, is wrong.

a. The Relevant Extrinsic Evidence Supports Nichia’s Construction

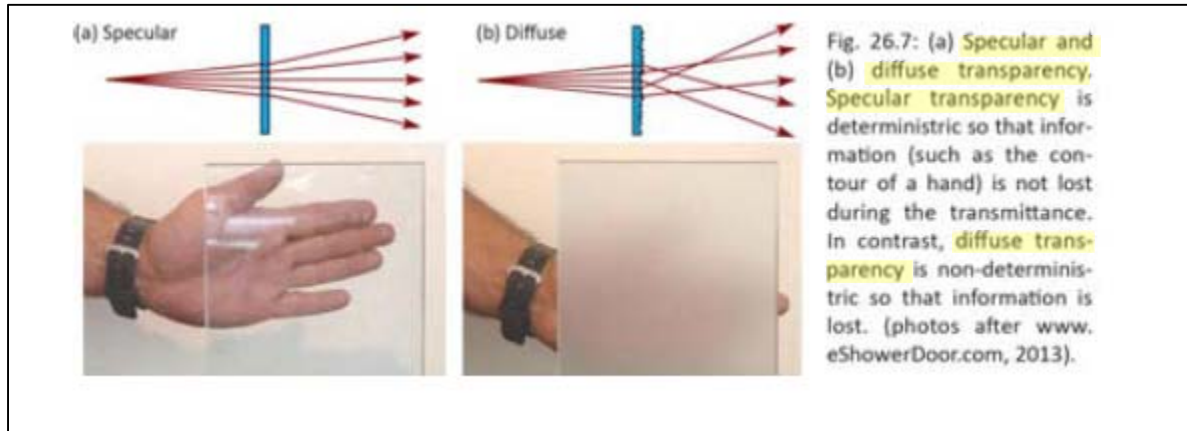
First, a prior Federal Circuit case did not decide the current debate. Instead, it construed a different term (“clear”) in a different and unrelated patent in a case involving different parties. *See Terlep*, 418 F.3d at 1384. Indeed, the patent at issue in that case does not even use the term “transparent;” that term was introduced in the court’s construction of the term “clear.” Just as “[a] particular term used in one patent need not have the same meaning when used in an entirely separate patent,” a term introduced in a court’s construction of another term in an unrelated patent cannot be controlling on how “transparent” is used in the Tanda ’734 Patent. *See Medrad*,

Inc. v. MRI Devices Corp., 401 F.3d 1313, 1318 (Fed. Cir. 2005) (“In fact, there are many situations in which the interpretations will necessarily diverge.”). It is black letter law that claims must “be read in view of the specification, of which they are a part.” *Phillips*, 415 F.3d at 1315 (citation and quotations omitted). Simply put, the Federal Circuit’s decision in *Terlep* is irrelevant here.

Second, GVL’s citation to dictionary definitions is misplaced. It is axiomatic that extrinsic evidence is less reliable than the patent and its prosecution history in determining how to read claim terms. *Phillips*, 415 F.3d at 1321-23 (holding that a court may rely on dictionary definitions “so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents”) (citation omitted). This is especially so where the dictionary – as here – is from a different and unrelated field. GVL offers the Dictionary of Optometry and Visual Science to support its construction. *Supra* at 9. Optometry refers to the study of eyes and other visual systems – it is directly related to so-called “imaging optics.” As Dr. Wetzel has already explained, while GVL’s definition may make sense in that field, it is not relevant and in fact is counterproductive for light guiding optics related to the field of the Tanda ’734 Patent invention. Wetzel Decl., ¶103. Dr. Wetzel’s testimony regarding what a POSITA would understand stands un rebutted, and nothing in GVL’s answering brief can support its construction in view of Dr. Wetzel’s testimony.

Indeed, Dr. Wetzel explained why Nichia’s construction is consistent with the understanding of a POSITA and relevant extrinsic evidence, because, “particularly in the context of LEDs and lighting optics, transparent is used broadly to refer to allowing light to pass through.” Second Wetzel Decl., ¶10 (JA-34). For example, McGraw-Hill Dictionary of Scientific and Technical Terms (6th ed. 2003), provides a definition as “[PHY] Permitting

passage of radiation or particles.” See JA-16 at p. 2181 (JA 16). Likewise, Rensselaer Polytechnic Institute Professor Fred Schubert describes a range of “transparency,” ranging from a specular surface (which is clear), to a diffuse surface (such as a “frosted-glass surface”).



JA-21 at 26 – 8-9 (Fig. 26.7) (annotated with yellow highlighting). That is, diffusive passage of light – such that objects beyond *cannot* be clearly viewed – is specifically referred to as a type of “transparency” in the relevant field. *Id.* This latter context is consistent with how “transparent” is used throughout the Tanda ’734 Patent. This usage makes sense in the context of lighting optics, which is relevant to the field of the invention, and where the goal is to achieve broad illumination (e.g., a consumer does not need to trace the light back to individual LED chips, but rather wants light to spread evenly about a room). See Wetzel Dec. ¶ 103 (contrasting, on the one hand, lighting optics, which is relevant to the invention and where “uniform ... distribution” of light is a goal; with, on the other hand, imaging optics, which is not relevant to the invention and where there may be an expectation to clearly see objects); Second Wetzel Dec. ¶10 (explaining that “light may be diffused or scattered to conceal the point-source nature of an LED chip.”).

b. Only Nichia's Construction is Consistent with the Specification

Rather than address how the claims recite, and the specification describes, “transparent,” the only intrinsic evidence GVL addresses is a single reference to “transparent or translucent resin” in the “Background of the Invention” when describing prior art. ’734 Patent, 1:45-53. The Tanda ’734 Patent does not use the term “translucent” in the claims, or anywhere else in the specification for that matter. In any event, the claim construction dispute is not over the meaning of “translucent;” it is about the meaning of “transparent,” and only Nichia’s proposed construction makes sense in the context of the claims and the entire specification.

Indeed, the specification *contradicts* GVL’s proposed construction, and particularly the idea of transmitting light “without appreciable scattering.” The specification teaches that the lower surface of the “transparent board 20 is a non-smooth surface,” such as having dimples that are purposefully formed, a feature that would cause light to *scatter*. Wetzel Dec. ¶ 101; ’734 Patent, 3:53-59. The specification also teaches that the transparent member may include a diffusion agent that causes light to diffuse (i.e., *scatter*). Wetzel Dec. ¶ 102; ’734 Patent, 13:40-44. Not only does GVL fail to address these arguments, it argues that it knows better than the inventors how to achieve their invention. Specifically, GVL argues that because “a transparent structure [per GVL, a clear structure] provides the broadest possible transmission of light, it necessarily serves this function better than a translucent structure [per GVL, one that appreciably scatters light].” *Supra* at 10. Such attorney argument cannot overcome the express teaching of the patent, which explains with respect to two *transparent* structures – the transparent board and

the transparent member – that light outgoing efficiency and directivity of light are *improved* by intentionally causing appreciable scattering of light.⁶ ’734 Patent, 3:53-4:3; 13:11-32.

As explained, the intrinsic evidence that GVL ignores aligns with Nichia’s proposed construction, as the Tanda ’734 Patent’s specification repeatedly uses the phrase “transparent” to express Nichia’s proposed construction—“allowing light to pass through.” *Supra* at 5-6. For example, the specification provides that “[t]he **transparent** die-bonding member 52 *helps light to outgo through the lower surface* of the light emitting element 10, and *allows the light to pass* the die-bonding member 52 and the **transparent** board 20. Thus, *the light can outgo*.” Tanda ’734 Patent, 3:32-35 (emphasis added). There are many more examples:

- “In addition, since the LED chip is attached so that its upper surface faces a side surface of the **transparent** bulb, there is an advantage that directly and outwardly directs *light that outgoes* through the upper and lower surfaces of the LED chip.” Tanda ’734 Patent, 8:45-9:4 (emphasis added).
- “It is important to optimize elimination of a member that cuts off light from the LED chip, that is, to bring the LED chip closer to a suspended state inside a light emitting apparatus such as **transparent** bulb *so that light* emitted through all the peripheral surfaces of the LED chip *can effectively outgo*. This construction can provide a light emitting device that serves as a suitable lighting apparatus capable of illuminating a wide area.” Tanda ’734 Patent, 9:5-25 (emphasis added).
- “On the contrary to this [conventional devices], in the light emitting device [of this embodiment], the **transparent** board 20 that is provided the light emitting element 10 mounted thereon *passes light*, and the **transparent** member 40 is formed around all the peripheral surfaces of the light emitting element 10. This construction *allows light to outgo* through all the peripheral surfaces. Therefore, the light emitting device can be used for typical lighting application that *provides broad light emission*.” Tanda ’734 Patent, 9:44-54 (emphasis added).

⁶ Indeed, another patent at issue in this case also explains the advantage of scattering. The Niki ’191 Patent explains that by providing a patterned sapphire substrate “the effects of light scattering or light diffraction notably increase so that the efficiency of light emission significantly increases.” Niki ’191, 10:47-49; *see also id.* at 10:60-63 (further explaining that increasing “scattering and diffraction of propagated light” can reduce the “absorption loss of light at the time of propagation”).

- “*Light that passes* through the **transparent** board 20 *can outgo* in a light emitting element 10 mount direction. In this construction, *light that outgoes* in various directions can be directed in one direction. Therefore, it is possible to provide a light emitting device that *can emit light at high luminance.*” Tanda ’734 Patent, 13:63-67 (emphasis added).

See also Wetzel Decl., ¶88 (collecting more examples).

Finally, dependent claim 17, which recites that the “board is configured to be transparent,” includes a subordinate clause indicating the purpose of configuring the board to be transparent – it is “*so that a light emitted* from the plurality of light emitting element chips on the first surface side of the board *forwards outside of the light emitting device through* the second surface of the board.” In other words, in the context of the board being configured to be transparent, claim 17 expressly explains that it is for the purpose of light passing through a surface of the board.

In summary, the intrinsic evidence, which GVL fails to address, is contrary to GVL’s proposed construction and supports Nichia’s construction. GVL’s construction improperly rests on extrinsic evidence in the form of a prior court decision and either non-technical dictionaries or a dictionary for an unrelated field, and is based on the fallacy that there is only one “accepted” definition of transparent. To the contrary, the extrinsic evidence shows that there are multiple uses of the term “transparent,” and the uses in the LED field in particular are consistent with the usage in the Tanda ’734 Patent, and in Nichia’s construction. The Court should therefore adopt Nichia’s proposed construction.

4. Defendant’s Sur-Reply Position

- a. All Extrinsic Evidence Demonstrates that the Accepted Definition of “Transparent” Does Not Mean “Translucent”

Contrary to Nichia’s assertions, the extrinsic evidence consistently supports GVL’s position and establishes that the accepted meaning of “transparent” excludes “translucent.”

First, Nichia’s contention that the Federal Circuit’s decision in *Terlep*, 418 F.3d at 1379 affirming the construction of “clear” as “**transparent** or having the property of **transmitting light without appreciable scattering so that bodies lying beyond are seen clearly**” is irrelevant, is wrong. Nichia’s position is premised on the remark in *Medrad, Inc.*, 401 F.3d at 1318 that “[a] particular term used in one patent need not have the same meaning when used in an entirely separate patent.” But that same paragraph—which Nichia’s quotation cuts off—goes on to emphasize that inconsistent constructions of the same term are appropriate only where the patents “involv[e] **different technology**,” or a specification sets forth an “**express** definition” or otherwise “**dictate[s]** a definition that differs.” *Medrad*, 401 F.3d at 1318. Thus, in *Medrad*, inconsistent constructions were appropriate because “[t]he use of a term in a patent on a **detergent** is of little pertinence to the use of a similar term in a patent on **MRI RF coils**.” *Id.* at 1319. That exception does not apply here, where both the ’734 Patent and “[t]he [patent at issue in *Terlep*] relate[] to omni-directional light emitting diode (“LED”) lamps.” *Terlep*, 418 F.3d at 1380. Similarly, the exceptions for “express definition” or other “dictates” of the specification do not apply because Nichia concedes that “Nichia has not acted as its own lexicographer.” *Supra* at 1.

The fact that the *Terlep* patent construed “clear” to mean “transparent”—as opposed to “transparent” to mean “clear”—does not change this result. The Federal Circuit equated the terms *to one another*, and explained that both mean “having the property of transmitting light without appreciable scattering so that bodies lying beyond are seen clearly.” *Terlep*, 418 F.3d at 1384. Moreover, the Federal Circuit expressly refused to stretch the accepted definition of these terms to cover “translucent” structures, because “nothing in the claims or the written description warranted giving the term . . . an expansive meaning that would cover ‘translucent.’” *Id.*

Second, Nichia’s assertion that the Court should ignore extrinsic evidence that distinguishes “transparent” and “translucent” is baseless. The thrust of Nichia’s position is that the *three* exemplary dictionary definitions cited in GVL’s Response Brief are irrelevant because *one* relates to the field of “Optometry and Visual Science,” which Nichia’s paid expert claims is distinguishable from the field of lighting. As an initial matter, Nichia and Dr. Wetzel do not attempt to address the definitions in remaining technical dictionaries, which also universally support GVL’s construction. Further, Nichia and Dr. Wetzel do not offer a competing definition from an *LED lighting* dictionary. Instead, they offer only a vague, *secondary* definition from the general-purpose McGraw-Hill Dictionary of Scientific and Technical Terms. *Supra* at 12-13. That definition—“[p]ermitting passage of radiation or particles”—is at most silent as to whether it would encompass both “transparent” and “translucent” structures. However, the same dictionary goes on to offer an explicit definition in the more relevant context of a “transparent medium,” which it defines as “[a] medium which has the property of transmitting rays of light in such a way that *the human eye may see through the medium distinctly*.” JA-16, 2181.

Nichia additionally argues that a figure from a publication of Dr. Fred Schubert supports its position. But even this cherry-picked figure does not directly address the definition of the term “transparent.” JA-21, 26 – 8-9 (Fig. 26.7). Rather, it merely coins the terms “specular transparency” and “diffuse transparency” to facilitate a discussion of “deterministic” and “non-deterministic” light flow through a surface in the distinct context of a “chapter . . . mostly concerned with additive color mixing.” JA-35, 26-1. Any implication that Dr. Schubert somehow thereby defined “transparent” to include “translucent” is disposed of by examining numerous instances *in the same book* in which Dr. Schubert *expressly* addressed the issue *in the context of LED packages*. For instance, in a chapter entitled “Packaging: Materials used in packaging”—

which is plainly relevant to the LED packages at issue here—Dr. Schubert explains that “transparent” means “transparent-glass-like,” while “translucent” means “frosted-glass-like”:

32.3 Modification of resins by fillers

Resins, in their pure state, are optically transparent. In order to change the properties of resins, they are modified by the addition of *fillers*.⁶³ These fillers include light-scattering particles that modify the resin from being transparent (transparent-glass-like), to translucent (frosted-glass-like), and ultimately to reflective (white-colored porcelain-like). Suitable light-diffusing particles,

JA-35, 32-6. Dr. Schubert then explained that “transparent” and “translucent” structures have distinct advantages and disadvantages, such that it would not be appropriate to equate the two:

A translucent resin can have an advantage over a transparent resin. In particular, some scattering of an LED-chip-encapsulating resin can be advantageous to enhance light extraction. It is known that light propagating in a clear (transparent) encapsulating resin of an LED package is be subject to some trapped optical modes that cannot be outcoupled from the package. Such

JA-35, 32-7; *see also id.* at 31-1 (distinguishing “transparent or translucent” structures).

b. The Intrinsic Evidence Offers No Basis to Depart from the Accepted Definition of “Transparent”

The intrinsic evidence offers no suggestion that “transparent” should be redefined—contrary to the accepted definition—to mean “translucent.” As an initial matter, Nichia fails to substantively address the only portion of the ’734 Patent that directly addresses the issue. Namely, the specification expressly distinguishes these terms, explaining that a certain resin used in the disclosed device could be one of two alternatives: “transparent *or* translucent.” JA-1, 1:48-51. Nichia offers no rebuttal, only the facile observation that “the claim construction dispute is not over the meaning of ‘translucent;’ it is about the meaning of ‘transparent.’” *Supra* at 14. But, by contrasting “transparent” and “translucent,” the patentee made clear that its choice to *claim only* “transparent” structures is meaningful. GVL’s construction gives meaning to the word the patentee *actually used* to put the public on notice of its claim scope. Nichia’s construction ignores the distinction. Nichia’s inability to address this text is dispositive.

The remainder of Nichia’s argument is premised on a logical fallacy. Nichia cites examples of passages indicating that transparent structures are used to transmit light, such as “the **transparent** die bonding member 52 *helps light to outgo through the lower surface.*” *Supra* at 15-16 (emphasis Nichia’s). Nichia then concludes that, because the described transparent structures transmit light, any structure that transmits light—including a translucent structure—is necessarily transparent. *Supra* at 14-16. This argument improperly affirms the consequent. That is, the fact that A implies B does not mean that B implies A. Thus, the fact that transparent structures transmit light does not mean that any structure that transmits light is transparent.

B. Tanda ’734 Patent: “first set of light emitting element chips . . . second set of light emitting element chips”

<u>Plaintiff’s Proposed Construction</u>	<u>Defendant’s Proposed Construction</u>
no construction necessary, plain and ordinary meaning	“a first set of multiple light emitting chips connected in series . . . a second distinct set of multiple light emitting chips connected in series, wherein the first and second sets are connected in parallel with each other”

1. Plaintiff’s Opening Position

There is no need to construe the phrase “first set of light emitting element chips . . . second set of light emitting element chip,” which is found in claims 1, 22, 26, and 27 of the Tanda ’734 Patent. Claim 1 reads:

1. A light emitting device comprising:

a board having end portions and a center portion therebetween in a longitudinal direction, *the board having a first surface on a first surface side thereof and a second surface on a second surface side thereof*, the second surface being an opposite side to the first surface, the first surface including a first region and a second region, the first region extending from the center portion of the board to one of the end portions, the second region extending from the center portion of the board to the other of the end portions;

a plurality of light emitting element chips mounted on the first surface side of the board...

wherein a first set of the light emitting element chips are mounted on the first region and arranged from the center portion of the board to the one of the end portions, [and]

wherein a second set of the light emitting element chips are mounted on the second region and arranged from the center portion of the board to the other one of the end portions. . . .

'734 Patent, 15:11-49 (emphasis added). In short, the claimed light bulb has a board. The board has a center portion on its first surface, with a first region extending from the center portion to one end of the board and a second region extending from the center portion to the other end of the board. A first set of LED chips is mounted on the first region, and a second set of the LED chips is mounted on the second region. The words of the claim phrase are used according to their plain and ordinary meaning; the claim is easily understood. Wetzel Decl. ¶¶ 125-130.

GVL seeks to add limitations regarding the manner in which the light emitting chips are electrically connected. Bedrock patent law dictates that it “is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the *claims* to be so limited.” *GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (emphasis added) (quoting *Liebel–Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed.Cir.2004)). Claim 1 does not require any particular wiring configuration (*e.g.*, series vs. parallel), and there is no reason to add such limitations. Indeed, where Nichia intended the claims to require a particular wiring configuration, it said so. *See* dependent claim 12 (“The light emitting device according to claim 1, wherein the plurality of light emitting element chips is electrically connected in series.”).

Rather, claim 1 is directed to the shape of the chip arrangement, which is described by the plain language – arranged from the center portion of the board to one of the end portions (or the

other). Wetzel Decl. ¶ 134; *see also* JA-2, at 12-13 (Response Under 37 CFR §1.111 (Dec. 2, 2016) distinguishing prior art with “star shaped” or “crossed” layouts). That should be the end of it. Nothing in the intrinsic record supports GVL’s position with respect to this term, and it should be rejected.

2. Defendant’s Answering Position

Hidden within Nichia’s proposal that the term “*first set* of light emitting element chips” and “*second set* of light emitting element chips” be assigned only an unstated “plain meaning” is the assertion that any plurality of chips can be arbitrarily divided into two abstract “sets” to satisfy this limitation. But, much like sets of playing cards, flatware, and tools, “sets” of light emitting chips require some degree of order and organization beyond an attorney’s opportunistic grouping. Accordingly, in contrast to Nichia’s formless construction, GVL’s construction makes explicit that (1) the claimed two distinct sets of chips must be defined by structural features, not an arbitrary subdivision of a larger set; and (2) the appropriate structural feature to define and distinguish sets of chips are their electrical interconnections. Specifically, chips wired together in series (i.e., end-to-end) constitute a distinct set, and multiple sets wired in parallel (i.e., side-by-side) are distinct. For the reasons detailed below, the Court should adopt GVL’s proposed construction.

First, Asserted Claims 1, 22, 26, and 27 of the Tanda ’734 Patent expressly require **two distinct sets** of light emitting element chips, which must be structurally distinguished.

A light emitting device comprising: . . .

a plurality of light emitting element chips mounted on the first surface side of the board; . . .

wherein a **first set of the light emitting element chips** are mounted on the first region and arranged from the center portion of the board to the one of the end portions,

wherein a **second set of the light emitting element chips** are mounted on the second region and arranged from the center portion of the board to the other one of the end portions . . .

Tanda '734 Patent at 15:11, 22-23, 40-47 (Claim 1). The Federal Circuit has repeatedly held similar language to exclude arbitrary groupings. For instance, in *Oatey Co. v. IPS Corp.*, 514 F.3d 1271 (Fed. Cir. 2008), the Federal Circuit held that the phrase “***first*** and ***second*** juxtaposed drain ports in said bottom wall’ defines ***distinct openings***.” *Id.* at 1277–78 (emphasis added). Arbitrarily declaring two regions of a single opening to be the claimed first and second drain ports would not satisfy this limitation. Similarly, in *Honeywell Int’l, Inc. v. Universal Avionics Sys. Corp.*, 488 F.3d 982, 993 (Fed. Cir. 2007), the Federal Circuit affirmed that the plain language of the terms “***first*** alert envelope” and “***second*** alert envelope” required “***two distinct alert zones***.” Again, arbitrarily dividing an alert envelope into two zones would not satisfy this limitation. Similarly here, the first and second sets must be defined by structural features, not an attorney’s whims.

Second, the specification clarifies that the claimed “sets” are groups of chips that are electrically ***connected in series***, and the claimed “first set” and “second set” are in turn ***connected in parallel*** to one another. The Tanda '734 Patent describes the claimed “sets” exclusively in Figures 14 and 15, which in turn are described only in a single paragraph of the specification (Tanda '734 Patent at 14:9-29). *See Facebook, Inc. v. Blackberry Ltd.*, Case No. 18-cv-05434, 2019 U.S. Dist. LEXIS 215260, at *43 (C.D. Cal. Dec. 13, 2019) (assigning significant weight to the disclosure to “the paragraph [providing] the only disclosure related [the disputed claim term] in the entire specification”). As that paragraph explains, LED chips electrically connected in series (i.e., end-to-end) form a set:

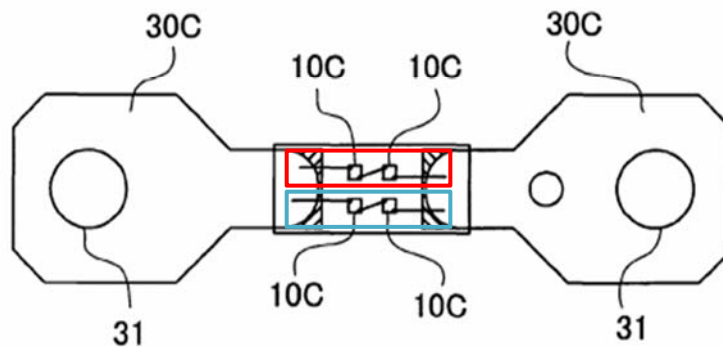
“a light emitting device 1200 includes four LED chips 10C. Two LED chips among the LED chips 10C are ***connected in serial as one set*** between a pair of metal plates 30C.

JA-1 (Tanada '734 Patent) at 14:12-13. By contrast, other LEDs that are not connected in the same series—such as a distinct series of LED chips connected in “parallel”—are not part of the same set:

*Two sets in which the two LED chips 10C are connected in serial are electrically **connected in parallel**. . . .*

JA-1 (Tanada '734 Patent) at 14:12-13. This distinction is depicted in the below annotated version of Fig. 14:

FIG.14



JA-1 (Tanada '734 Patent) at Fig. 14 (annotations added). That is, the two chips annotated in red form a “set” because they are connected in series (i.e., end-to-end), and the two chips annotated in blue form a “set” because they too are connected in series. These two sets are separate and distinct because they are not connected in series to one another, but rather are connected in parallel (i.e., side-by-side).⁷

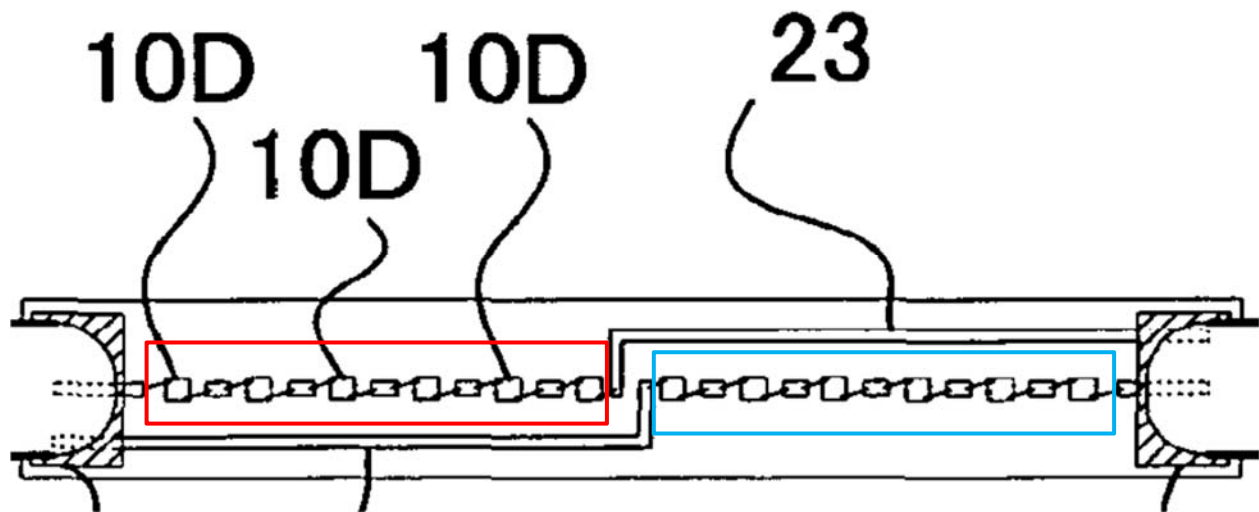
⁷ More technically, two sets are connected in “parallel” if the pair of electrical terminals on each of the sets connect to the same two points. Here, the sets are connected in parallel because each set has one terminal that connects to metal plate 30C shown on the left side of the Figure 14 and one terminal that connects to metal plate 30C shown on the right side of the Figure 14.

Fig. 15 confirms this understanding. As the Tanda '734 Patent explains,

“twelve LEDs 10D align in the horizontal direction. *Six LEDs among them are connected in serial as one set*”

“*Two sets* in which the six LEDs of them are connected in serial are *connected in parallel.*”

JA-1 (Tanada '734 Patent) at 14:10-26 (emphasis added). This arrangement of “sets” is depicted in the below annotated excerpt of Fig. 15.



JA-1 (Tanada '734 Patent) at Fig. 15. Again, the six chips annotated in red form a “set” because they are connected in series (i.e., end-to-end), and the six chips annotated in blue form a “set” because they too are connected in series. These two sets are distinct first and second sets because they are not connected in series to one another, but rather are connected in parallel (i.e., *electrically side-by-side*⁸).

The prosecution history confirms this understanding. During prosecution, the examiner rejected pending claim 1 as obvious in view of U.S. Pat. Pub. No. 2004/0239242 (“Mano”). In

⁸ Two sets are connected in “parallel” if the pair of electrical terminals on each of the sets connect to the same two points. Here, although the two sets are located in a single line, each is extended by an electrical connection lead such that the terminals of each are connected to the same two points.

relevant part, the examiner found that “Mano teaches embodiments where a plurality of light emitting chips 21 are mounted . . . along a line that extends in a longitudinal direction.

Accordingly, it would have been obvious . . . to mount a plurality of light emitting chips 21 . . . along a line that extends in the longitudinal direction in [the relevant embodiment of Mano].”

JA-19 (Prosecution History Non-Final Rejection) at 4-5. To overcome this rejection, the applicant amended claim 1 to recite the “sets” language at issue here:

AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims.

. . .

wherein a first set of the light emitting element chips are mounted on the first region and arranged from the center portion of the board to the one of the end portions, and

wherein a second set of the light emitting element chips are mounted on the second region and arranged from the center portion of the board to the other one of the end portions

JA-2 (Prosecution History Response) at 2-3. If Nichia’s contention that any group of chips can be arbitrarily divided into sets were correct, this amendment could not have overcome the prior art. That is, if, as the examiner concluded and the applicant did not dispute, a plurality of light emitting chips was obvious, then arbitrarily labeling two subsets of such chips as “sets” would be equally obvious. Accordingly, the amendment that the applicant relied on to secure the ‘734 patent would have no distinguishing effect if “sets” did not refer to a grouping based upon electrical interconnection, as the sole disclosure in the ‘734 Patent states.

Nichia’s insistence that the claimed “sets” are distinguished based on whether they are located to the left and the right of center does not cure this deficiency. Any “plurality of light emitting chips . . . along a line that extends in the longitudinal direction”—the structure the

examiner found to be obvious in view of Mano (JA-19 at 5)—may be divided into a left half and a right half. Thus, again, if the two claimed “sets” merely refer to the chips on the left and the chips on the right, then the applicant’s amendment could not have overcome the prior art. Accordingly, Nichia’s attempted cure further confirms that the only construction that comports with the prosecution history is that proposed by GVL.

3. Plaintiff’s Reply Position

GVL’s construction is premised on reading in a specific embodiment described in the specification, and therefore at the outset, GVL has a heavy burden of overcoming the presumption that the plain meaning controls. GVL argues that absent construction, the “plurality of chips can be arbitrarily divided into two abstract ‘sets’”, and thus, the claims must be construed to require a specific wiring arrangement. *Supra* at 22. This argument is flawed on multiple levels. First, the plain language of the claims already provides the bounds for dividing the LED chips into distinct first and second sets. Second, there is nothing in the independent claims where the terms first appear about specific wiring arrangements, and no reason to read extraneous limitations into the claims. The independent claims are about spatial arrangements of the elements, and aspects of the electrical connections are left to the dependent claims. Third, GVL has based its argument in part on a misreading of the prosecution history. These failings in GVL’s arguments are discussed in detail below.

As an initial matter, the plain language of the claims does not allow for chips to be “arbitrarily divided” into sets. The claims are quite clear on the required spatial arrangement of the sets. Specifically, claim 1 provides that the chips in the “first” and “second” sets of chips are mounted on regions that extend outward – in opposite directions – longitudinally from the center portion of the board, and arranged from the center portion to opposing end portions. These

features are highlighted in claim 1, which is reproduced below:

1. A light emitting device comprising:

a board having end portions and a center portion therebetween in a longitudinal direction, the board having a first surface on a first surface side thereof and a second surface on a second surface side thereof, the second surface being an opposite side to the first surface, the first surface including a first region and a second region, the first region extending from the center portion of the board to one of the end portions, the second region extending from the center portion of the board to the other of the end portions;

a plurality of light emitting element chips mounted on the first surface side of the board...

wherein a first set of the light emitting element chips are mounted on the first region and arranged from the center portion of the board to the one of the end portions, [and]

wherein a second set of the light emitting element chips are mounted on the second region and arranged from the center portion of the board to the other one of the end portions. . . .

'734 Patent, 15:11-49 (emphasis added). This is all the context that is necessary to understand the scope of the claim, and there is nothing “arbitrary” about two sets of chips delineated based on where the chips are mounted and how they are arranged from a center portion. GVL’s argument is without merit, and the *Oatey* and *Honeywell* cases it cites are readily distinguishable. The claim here requires that chips of the first set are mounted in a first region extending longitudinally from the center portion in one direction, and chips of the second set are mounted in a second region extending longitudinally from the center portion in the other direction. In addition to specifying where the chips of each set are mounted (the first or second region), the claims also dictate how they are arranged – “from the center portion of the board to the one [or the other] of the end portions.” The extraneous limitations proposed by GVL are unnecessary; GVL has ignored the surrounding language of the claim.

GVL seeks to modify the scope of the claim by further distinguishing the first and second sets based on their electrical connections. That is, GVL is attempting to create additional

distinctions – not expressly required by the independent claims – by reading in specific embodiments. This is contrary to bedrock patent law. *Supra* at 21 (citing *GE Lighting Sols., LLC*, 750 F.3d at 1309 and *Liebel–Flarsheim Co.*, 358 F.3d at 913). Nothing in the intrinsic record mandates the narrowing of the claims to a particular wiring configuration. The patent is clear that “[i]n the case where multiple light emitting elements are mounted,” that “conductive lines ... may be disposed between the pair of metal plates.” ’734 Patent, 5:55-61. The patent does not limit the manner in which those conductive lines are disposed. Indeed, later in the specification, after broadly stating that “a plurality of the light emitting elements 10 can be used” (*id.*, 14:10-11), the patent makes clear that, with respect to the embodiments of FIGS. 14 and 15 (having a plurality of light emitting elements 10), those embodiments are “example[s].” ’734 Patent, 14:11. Accordingly, a POSITA would not understand the patent to be limited to the specific wiring arrangement shown in FIG. 15. To the contrary, and as explained by Dr. Wetzel, it would be readily apparent to a POSITA that the LED chips can be arranged with numerous wiring configurations, and the series-parallel example of the specification is precisely that – an example. Second Wetzel Decl., ¶15.

Further, GVL’s construction is incompatible with the dependent claims, and the principles of claim differentiation further undermine GVL’s position. As pointed out in Nichia’s opening brief, when Nichia intended the claims to require a particular wiring configuration, it said so in specific terms, such as in the dependent claims. GVL’s construction would render dependent claim 12, which addresses electrical connection, obsolete and nonsensical. Claim 12 requires that the plurality of light emitting element chips be electrically connected in series. ’734 Patent, 16:6-8. The “plurality of light emitting element chips” are the members of the first and second sets. *See* claim 1 (“a first set of *the* light emitting element chips... a second set of *the*

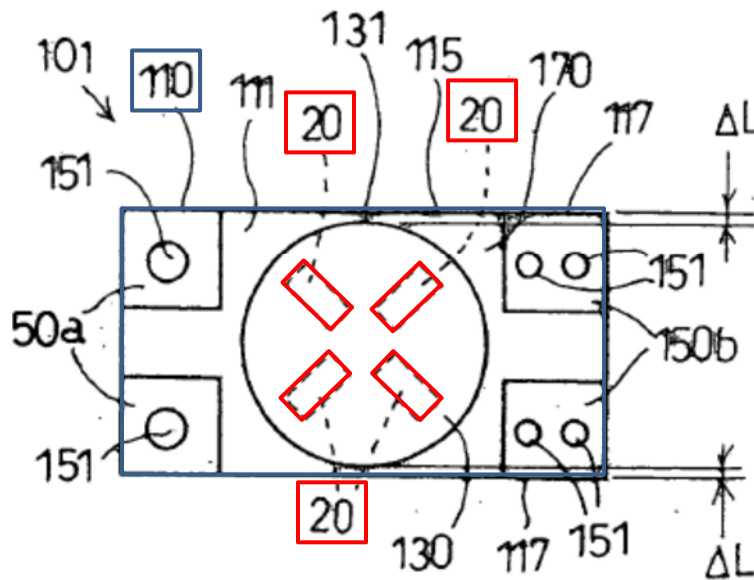
light emitting element chips.”). Thus, in claim 12, the first and second sets are electrically connected in series. However, the first and second sets cannot be both “connected in parallel with each other” (as required by GVL’s construction of the independent claim) *and* connected in series (as required by the dependent claim). GVL’s construction is therefore inconsistent with claim 12. Further, by specifying in the dependent claim a particular type of electrical connection, the doctrine of claim differentiation suggests that the independent claim is broader in scope than the dependent claim in this regard.

Finally, GVL misapprehends the prosecution history. Nichia did not, and does not, rely on electrical interconnection to distinguish the independent claims from the prior art; rather, Nichia relied on the mounting and arrangement of the chips in each set as claimed to distinguish the prior art. JA-2 at 12.

As an initial matter, Nichia argued during prosecution that the Mano reference failed to disclose a wavelength conversion member that is elongated in the longitudinal direction when viewed in plan view of the first surface side of the board, therefore rendering any argument about the delineation of “sets” irrelevant.

But in any event, Nichia additionally argued that the first and second set elements were not present in Mano because the chips in Mano are aligned in a star shape or crossed manner, as shown in FIGS. 14A, 16, and 20-21. FIG. 14A is reproduced below, with the rectangular substrate 110 annotated with a blue rectangle and the light-emitting elements 20 annotated with red rectangles:

Fig.14A



Nichia explained that the claim requires first and second sets, “i.e., two sets of more than one chip, or at least four chips that are positioned between end portions of the board and sealed by the wavelength conversion member.” JA-2 at 12. Because Mano disclosed chips “aligned in a star shape or crossed manner,” and not in a longitudinal direction from the center portion, Mano’s teachings did not disclose this feature of the claims.

Accordingly, the prosecution history does not support GVL's position that the claimed sets somehow require specific wiring and arrangement. In fact, the opposite is true. Nichia's claim construction positions are consistent with those expressed during prosecution, and found persuasive by the examiner.

C. Niki '101 Patent: “cross sections of the protruding portions taken along planes orthogonal to the surface of the substrate are convex in shape”

<u>Plaintiff's Proposed Construction</u>	<u>GVL's Proposed Construction</u>
“cross sections of the protruding portions taken along planes orthogonal to the surface of the substrate are outwardly curved in shape”	<p><u>Original Construction:</u> “cross sections of the protruding portions taken along planes orthogonal to the flat plane of the substrate exclusively comprise shapes wherein all internal angles are less than 180 degrees”</p> <p><u>Revised Construction:</u> “cross sections of the protruding portions taken along planes orthogonal to the surface of the substrate are outwardly curved in shape, <u>not polygonal in shape</u>”</p>

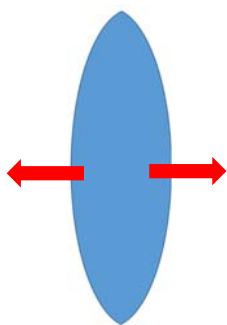
1. Plaintiff's Opening Position

Nichia's proposed construction of “convex” is consistent with the Niki '101 Patent's teachings, and will provide clarity for the parties, the Court, and the jury. GVL's construction, by contrast, is divorced from the patent's teachings and fails to provide clarity.

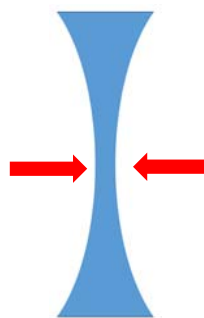
The term appears in independent claim 36, which provides in relevant part:

...cross sections of the protruding portions taken along planes orthogonal to the surface of the substrate are convex in shape....

'101 Patent, 24:16-18 (emphasis added). Consistent with the patent's teachings, convex here means an outwardly rounded, or curved shape (like that of a convex lens). *See, e.g.:*



(convex - outwardly curved)



(concave - inwardly curved)

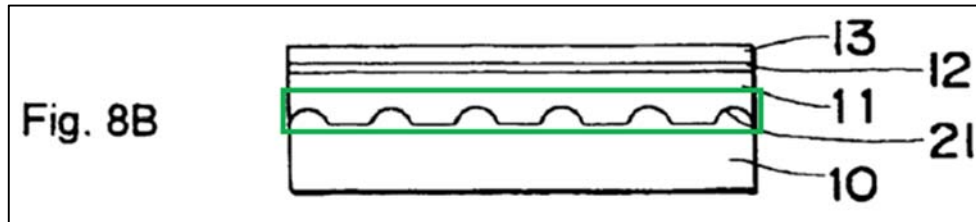
Wetzel Decl. ¶ 146. This conventional understanding of “convex” is consistent with the prosecution history, where Nichia supported the term by identifying a curved (semi-circular) protrusion in the specification. *See* JA-4, at 14 (RCE and Amendment (Jan. 11, 2008) referring to FIG. 8B). Similarly, during prosecution, “convex” protrusions were distinguished from the Nunoue reference (JA-14), which has square and trapezoidal gallium nitride (GaN) protrusions (*i.e.*, not outwardly curved). JA-4, at 28-30 (Amendments Under 37 CFR 1.116 (April 23, 2009)); *see also* JA-14, FIGs. 1, 7.

GVLs’ construction rests on a general geometric definition requiring “wherein all internal angles are less than 180 degrees.” This may accurately convey the concept of a “convex” polygon, but it does not provide clarity to the meaning of “convex” in the context of the patent. Wetzel Decl. ¶ 148. Indeed, it would encompass square and rectangular figures which runs contrary to the prosecution history of the Niki ’101 Patent. *Id.* Accordingly, Nichia’s construction is true to the claim language, the teachings of the patent and its prosecution history, all while providing clarity. It is therefore correct.

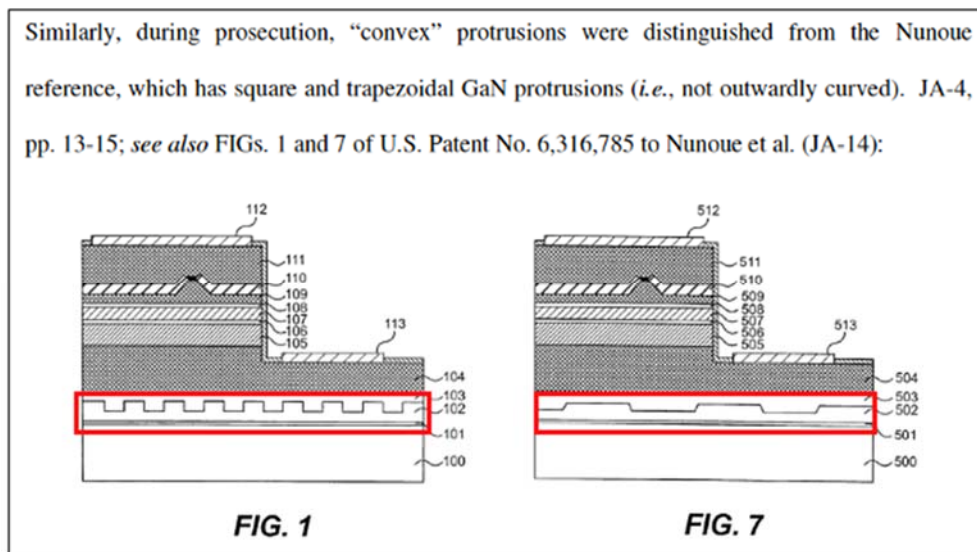
2. Defendant’s Answering Position

GVL originally proposed to construe the term “cross sections of the protruding portions taken along planes orthogonal to the surface of the substrate are convex in shape” as “cross sections of the protruding portions taken along planes orthogonal to the flat plane of the substrate exclusively comprise shapes wherein all internal angles are less than 180 degrees.” However, for simplicity, and in light of the representations and admissions made in Nichia’s opening brief and offered by Dr. Wetzel, GVL agrees to accept Nichia’s construction with one clarifying addition. Namely, GVL proposes to construe this term to mean “cross sections of the protruding portions taken along planes orthogonal to the surface of the substrate are outwardly curved in shape, not polygonal in shape.” (Additions to Nichia’s construction underlined.)

This addition is substantively identical to Nichia's proposed construction. Namely, Nichia and its expert explicitly defined convex as an "outwardly rounded, or curved shape (like that of a convex lens)." Wetzel Decl. ¶ 146.



Wetzel Decl. ¶ 147 (green annotation added to indicate convex protrusions). By contrast, Nichia and its expert argued that polygonal shapes with discrete angles—such as squares and trapezoids—should not be considered “convex”:



Wetzel Decl. ¶ 147 (red annotation added to indicate non-convex polygonal protrusions). And in the same amendment that Nichia cites in the above excerpt, the patentee further contrasted the claimed “convex” protruding portions from “triangular” protruding portions. Namely, the patentee admitted that the “protruding portions [of JP- JP2001160539 (“Hata”)] would have *triangular* cross sectional shapes.” JA-4 at 12 (emphasis added). However, the patentee expressly distinguished such “triangular” shapes from the claimed “convex” shaped.

Claim 96 is new. Support for claim 96 can be found in Fig. 8B of this application. Like claim 62, claim 96 is allowable since none of the cited references disclose protruding portions having cross sections taken along planes orthogonal to the surface of the substrate that are convex in shape as claimed.

JA-4 at 13. Accordingly, consistent with the prosecution history, Nichia's briefing, and the declaration of Nichia's own expert witness, the Court should make explicit that this term excludes polygonal protrusions with discrete angles, such as squares, trapezoids, and triangles. Rather, "convex" protrusions include only those "outwardly curved in shape."

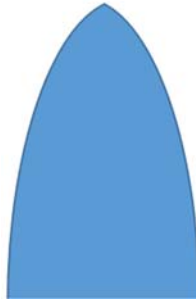
Although Nichia may contend that the additional language proposed by GVL is surplusage, this is incorrect. Indeed, it may not be inherently clear to a jury that an "outwardly curved shape," does not include angled shapes such as squares, trapezoids, and triangles. GVL's proposed construction avoids any such ambiguity.

3. Plaintiff's Reply Position

GVL's proposed construction changed considerably following Nichia's opening brief. Whereas GVL originally advocated for a construction where the cross sections *exclusively comprise* certain internal angles, it now takes the opposite position – *i.e.*, that the claim *excludes* polygonal protrusions with discrete angles. Neither of GVL's positions is correct, as both fail to account for the core feature of a cross section having a convex shape – inclusion of an outward curve.

During a meet-and-confer following GVL's change in position, GVL's counsel confirmed that its construction of "not polygonal in shape" means that the cross sections can have no discernable angles. For instance, GVL's counsel confirmed that its construction would not include cross sections having two curved surfaces that meet at an angle. That is, GVL contends that its construction requires a single, unbroken curve. By way of example, GVL

confirmed that its construction would *not* encompass the outwardly curved shape below, which is the top half of a **convex** lens:



Despite having a “point,” this shape (again, from a convex lens) is surely “convex,” as it is “outwardly curved in shape.” GVL’s construction is far too narrow, and unsupported by anything in the record. Indeed, although GVL contends that the above figure is “polygonal in shape,” and therefore does not meet its proposed construction of “not polygonal in shape,” it is not clear that is a technically correct use of the phrase, demonstrating the impracticality of the construction. In any event, nothing about the word “convex” requires the complete absence of any “discrete angles.”

GVL drew the wrong conclusions from the prosecution history of the Niki ’101 Patent. It is true that Nichia distinguished “convex” shapes from the squares, trapezoids, and triangles of the prior art – those shapes do not include outwardly curved surfaces. That is, it was the *absence* of curves, not the *inclusion* of “discrete angles,” that differentiated these references from the claim. GVL’s logic is flawed. The prosecution history does not require the new, negative limitation (“not polygonal in shape”) proposed by GVL.

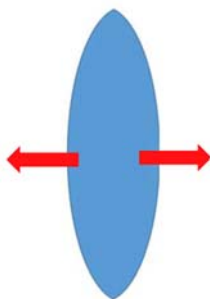
In summary, and as explained above, Nichia’s proposed construction is consistent with the understanding of a POSITA and consistent with the intrinsic record. GVL’s proposed construction, which simply modifies Nichia’s construction with an additional negative limitation, is without intrinsic or extrinsic support.

4. Defendant's Sur-Reply Position

The parties agree that “convex” cross sections must be “outwardly curved,” and do not include angular shapes, such as squares, trapezoids, and triangles. The only remaining dispute is whether the term “convex” nevertheless encompasses structures like the angular dagger point set forth in Nichia’s Reply, as Nichia contends:






Supra at 36. The provenance of this diagram highlights the lack of substance in Nichia’s position. This diagram is a selectively cropped and altered version of a “convex lens” shape that Nichia included in its Opening Brief, reproduced in its entirety below:



Supra at 32 (annotations *Nichia’s*). In the original version, Nichia appropriately included red arrows to highlight its point that “convex here means an outwardly rounded, or curved shape.” *Id.* That is, a “convex lens” is convex *with respect to light flow through its curved surfaces*. It does not follow from this that the lens is also convex with respect to the angular discontinuities at its top and bottom. Indeed, it does not take an expert to understand that the behavior of light flowing from top to bottom through the pointed surfaces would be drastically different than light flowing left to right through the convex surfaces. Thus, Nichia’s simplistic argument that the dagger point shape must be convex simply because it was arbitrarily cut from a larger structure

that happened to be called a “convex lens” should be rejected.

Indeed, the claim language mandates this conclusion. In context, the claim language specifically recites that the “*cross sections of the protruding portions . . . are convex in shape.*” ’101 Patent, Claim 36. That is, the cross section *of the protrusion*—not merely a *subset thereof*—must be convex. Nichia’s construction would effectively rewrite the claims to accommodate structures like the exemplary dagger point protrusion, which is not *itself* curved, but merely includes two *subsections* that are curved.

Cross Section	Subsection	Subsection
		

If the patentee had wanted to claim “cross sections of the protruding portions . . . including one or more subsections ~~are~~ convex in shape,” it was free to do so. Its choice not to is dispositive.

Nichia’s argument that GVL has drawn the wrong conclusions from the prosecution history is equally flawed. Nichia concedes that “[i]t is true that Nichia distinguished ‘convex’ shapes from the squares, trapezoids, and triangles of the prior art.” *Supra* at 36. Nichia now argues only that the relevant distinction was “the *absence* of curves, not the *inclusion* of ‘discrete angles.’” *Id.* But Nichia does not offer a single citation to support this self-serving, after-the-fact distinction. It cannot, because the applicant clarified that “convex” implies a roughly semicircular shape. As Dr. Wetzel explained, when “the phrase ‘convex in shape’ was added during prosecution of the patent, . . . Fig. 8B was referenced as support for the addition. Wetzel Decl., ¶ 147 (citing JA-4 at 12). Figure 8B includes only protrusions that are curved in their entirety; it does not suggest that the disjointed dagger point shape could be considered convex.

Fig. 8B



Tellingly, Nichia’s Reply does not include a single citation—intrinsic or extrinsic—in support of its claim that the dagger point shape is convex. This omission is particularly glaring with regard to Nichia’s paid expert, whose Second Declaration offered extensive opinions regarding every other term but remained conspicuously silent on the dagger point issue even though it is the only remaining dispute. Second Wetzel Decl., ¶ 18.

For the foregoing reasons, the Court should adopt GVL’s construction. Alternatively, GVL would be amenable to the equivalent construction, “cross sections of the protruding portions taken along planes orthogonal to the surface of the substrate are outwardly curved in shape, not angled” to placate Nichia’s concern that the word “polygonal” might confuse a jury.

D. Tamemoto ’791 Patent: “isolated processed portions”

<u>Plaintiff’s Proposed Construction</u>	<u>GVL’s Proposed Construction</u>
no construction necessary, plain and ordinary meaning or “isolated portions formed by laser light absorption”	<u>Original Construction:</u> “discrete weakened portions formed inside of the substrate by irradiation with a pulsed laser beam” <u>Revised Construction:</u> “isolated portions formed by <u>pulsed</u> laser light absorption”

1. Plaintiff’s Opening Position

The ’791 Patent is directed to an LED substrate that is divided through use of a laser. There is therefore no need to construe the term “isolated processed portions,” as a POSITA would understand this term by its plain and ordinary meaning. To the extent that the court does construe this term, a proper re-phrasing would be “isolated portions formed by laser light

absorption.” *See generally* Grigoropoulos Decl. §§ IV(A), V(C). This construction is true to the claims and the specification, and aligns with the plain meaning. ’791 Patent, 2:63-67, 4:30-34.

By contrast, GVL’s construction once again introduces unnecessary additional limitations. For example, GVL requires that the processed portions be “weakened,” without explaining what that means and how it would be determined. Grigoropoulos Decl. ¶ 117 (“[W]eakened” is a layman’s term that does not denote a specific structural limitation in this context.”). The Tamemoto ’791 Patent does not describe processed portions as being weakened and, indeed, the word weakened is not found in the specification. As another example, GVL requires that the isolated process portions be “formed inside of the substrate,” but this is unnecessarily confusing, as the claim already specifies the location of the process portions in relation to the irregularity face and the flat surfaces on the side of substrate. Finally, GVL’s construction swaps the word “isolated” for “discrete.” To the extent they mean the same thing, GVL’s change is unnecessary; to the extent “discrete” changes the meaning of “isolated” (and thus the claim), GVL’s construction is wrong. Grigoropoulos Decl. ¶¶ 114-116, 118-121.

2. Defendant’s Answering Position

Nichia has proposed that this term should either be interpreted according to its plain meaning or construed as “isolated portions formed by laser light absorption.”⁹ GVL originally proposed to construe the term “isolated processed portions” as “discrete weakened portions formed inside of the substrate by irradiation with a pulsed laser beam.” However, for simplicity, and in light of the representations and admissions made in Nichia’s opening brief and offered by Dr. Grigoropoulos, GVL agrees to accept Nichia’s proposed construction with one clarifying

⁹ In either case, Nichia concedes that “[t]he ’791 Patent is directed to an LED substrate that is divided *through use of a laser*.” *Supra* at 39.

addition. Namely, GVL proposes to construe this term to mean “isolated portions formed by pulsed laser light absorption.” (Additions to Nichia’s construction underlined.) This formulation is substantively identical to GVL’s originally proposed construction.¹⁰

Unlike Nichia’s proposed construction, which would appear to encompass sources of laser light that are not pulsed, GVL’s specification would limit the term to structures formed by pulsed laser light. This is consistent with the specification of the Tamemoto ’791 Patent, which consistently specifies that the processed portions must be formed using “pulsed” laser light:

- “**processed portions** are formed inside of the substrate by irradiation with a **pulsed laser beam**”
JA-6 (Tamemoto ’791 Patent) at 2:63-65 (emphasis added).
- “the **processed portions** are formed near the focal positions by focusing a **pulsed laser beam** inside of the wafer”
JA-6 (Tamemoto ’791 Patent) at 3:54-55 (emphasis added).
- “**processed portions** 12 that are separated from one another can be formed by focusing a **pulsed laser beam** inside of the substrate 10”
JA-6 (Tamemoto ’791 Patent) at 3:19-21 (emphasis added).

Moreover, the specification expressly distinguishes the claimed invention (and other recent inventions) from prior means for dividing a wafer into chips using a standard laser beam and criticizes the deficiencies of prior laser technologies:

[W]ith a method in which a wafer is heated and melted by being irradiated with a laser beam, the places that are melted and then re-solidify become discolored, and this decreases the brightness of a

¹⁰ For instance, Nichia objects to the portion of GVL’s original construction specifying that isolated portions are formed “inside of the substrate” *only for purported redundancy* because “the claim already specifies the location of the process[ed] portions.” Indeed, the specification further confirms that “processed portions are formed **inside** of the substrate.” JA-6 (Tamemoto ’791 Patent) at 2:63-65; *e.g., id.* at 3:18-21 (“processed portions . . . can be formed by focusing a pulsed laser beam **inside** of the substrate”), 3:42-43 (“the actual processed portions 12 are formed **inside** of the substrate 10”), 3:53-55, 3:64-65, 4:1-2. Nevertheless, because Nichia concedes that the claims make clear in context that the processed portions must be formed within the substrate, it is unnecessary to expressly include this statement in a construction of this term.

light emitting element, so a method has been proposed in which a pulsed laser beam with a short pulse width is used to work the wafer. **Using a pulsed laser beam with a short pulse width allows working to be performed that is free of discoloration because it involves multiphoton absorption rather than melting, so there is less of a decrease in the brightness of a light emitting element.**

JA-6 (Tamemoto '791 Patent) at 1:28-40 (emphasis added). Indeed, the use of a pulsed laser beam is so central to the invention that the specification indicates that pulsed laser technology dictates the substrate material that can be used to carry out the claims. JA-6 (Tamemoto '791 Patent) at 7:24-25 (“The material of the substrate can be selected from among those that can be processed with a pulsed laser beam.”).

Particularly given that there is no evidence to suggest that the term “isolated processed portion” has any meaning outside of this patent family, it should be construed consistent with the foregoing limiting statements in the specification to require “pulsed” laser light. *Facebook*, 2019 U.S. Dist. LEXIS 215260, at *41 (finding that “because the [disputed term] is a ‘coined’ term that has no meaning outside of the [asserted patent], it can be construed no broader than provided in the specification”).

3. Plaintiff’s Reply Position

Once again, GVL’s claim construction position evolved after Nichia’s opening brief. The parties now dispute whether, as Nichia contends, the phrase “isolated processed portions” should be given its plain and ordinary meaning, or whether, as GVL now contends, the phrase should be construed as “isolated portions formed by pulsed laser light absorption.”

GVL’s argument rests on the assumption that Nichia has agreed that the claim – a product claim – should be construed to add process steps. *See supra* at 40-42. This is incorrect. As previously stated, there is no need to construe this term. “A novel product that meets the criteria of patentability is not limited to the process by which it was made.” *Vanguard Prods.*

Corp. v. Parker Hannifin Corp., 234 F.3d 1370, 1372-73 (Fed. Cir. 2000) (citation omitted).

Therefore, process steps should not be read into a product claim unless “the patentee has made clear that the process steps are an essential part of the claimed invention.” *Continental Circuits LLC v. Intel Corp.*, 915 F.3d 788, 799 (Fed. Cir. 2019) (citations and quotations omitted). GVL has not met its burden of demonstrating that the method of creating isolated processed portions through “pulsed laser light absorption” is an “essential part” of Nichia’s claimed invention. Although GVL is correct that the Tamemoto ’791 Patent is directed to an LED substrate that is divided through the use of a laser, and embodiments use a pulsed laser, there is nothing in the intrinsic or extrinsic record that warrants reading in specific processing embodiments into a product claim.

Ultimately, “isolated processed portions” are self-defining—they are isolated, processed portions. This is readily understood by a POSITA, and could be communicated to a jury without undue effort. There is simply no reason, or need, to further inject complications into this common sense phrase.

4. Defendant’s Sur-Reply Position

Despite proposing a construction for this claim term, Nichia now argues that it need not be construed because “‘isolated processed portions’ are self-defining—they are isolated, processed portions.” *Supra* at 43. But Nichia’s circular explanation reveals precisely why this term should be construed. While “isolated,” “processed,” and “portion” may be familiar words standing alone, their combined meaning within the context of LED semiconductor manufacture is far outside the experience of the average juror. Indeed, Nichia’s expert criticized GVL’s original proposed construction for including the word “weakened,” which, though understood in isolation, he criticized as “a layman’s term that does not denote a specific structural limitation in this context.” *Supra* at 40 (quoting Grigoropoulos Decl. ¶ 117). Similarly here, a lay

understanding of the words “isolated,” “processed,” and “portion,” does not provide a framework for understanding the arcane procedure for precisely singulating a semiconductor wafer into individual LEDs claimed in the ’791 Patent. Given Nichia’s admission that its proposed construction—“isolated processed portions formed by laser light absorption”—“is true to the claims and the specification, and aligns with the plain meaning,” providing *at least* this guidance to the jury can only be helpful. *Supra* at 40.

Moreover, the Court should go further to additionally clarify that the “isolated portions [are] formed by pulsed laser light absorption,” as GVL’s proposed construction specifies. Although Nichia contends that this clarification improperly imports a process step from the specification into an apparatus claim, Nichia’s own proposed construction already specifies that the “isolated portions” are “formed by laser light absorption.” Simply clarifying that the laser is “pulsed” does not render it any more of a “process.” More importantly, the sole structural definition provided for this “processed portion” *is* that it is “*processed*.” If “processed” meant simply “having been subjected to process”—as it might appear in a vacuum—then “processed portion” would be unbounded, which cannot be the case.

Here, the specification of the ’791 Patent makes clear that processed portions are formed not by general laser light absorption, but specifically by *pulsed* laser light absorption. For instance, in the “Background Art” section, the specification distinguishes the claimed invention from prior art “in which a wafer is heated and melted by being irradiated with a *laser beam*”:

Using a ***pulsed*** laser beam with a short pulse width allows working to be performed that is free of discoloration because it involves multiphoton absorption rather than melting, so there is less of a decrease in the brightness of a light emitting element.

JA-6 (’791 Patent), 1:28-40. Then, in the “Summary of Invention,” the specification explains that the invention is an enhancement for *pulsed* laser techniques:

[W]ith a method in which a wafer is divided by forming a modification region with a *pulsed* laser beam . . . it is difficult to control the direction in which the crack runs As a result of **diligent research to solve the above problems, the inventors have discovered that the above problem can be solved**

JA-6, 1:60-2:19. Moreover, although it is labeled a “preferred embodiment,” the specification in fact discloses *only one embodiment*, in which processed portions are consistently described as formed by a “pulsed” laser beam. *E.g.*, JA-6, 2:63-65, 3:54-55, 3:19-21. Tellingly, Nichia acknowledges that “GVL is correct that . . . embodiments use a pulsed laser,” but is unable to offer a single counterexample of an embodiment that uses another type of laser radiation. *Supra* at 43. Thus, following the teaching of the specification that “processed portions” refers specifically to pulsed laser light is the only way to give structure to an otherwise vacuous term. *Hologic, Inc. v. SenoRx, Inc.*, 639 F.3d 1329, 1338 (Fed. Cir. 2011) (limiting a construction where “the specification . . . consistently and exclusively” disclosed only one embodiment).

The court in *Research in Motion, Ltd. v. Eastman Kodak Co.*, 2012 U.S. Dist. LEXIS 141598 (N.D. Tex. Oct. 1, 2012) addressed a similar dispute. There, the apparatus claim at issue recited “processed image signals.” *Id.* at *55. The patentee argued that “processed image signals” was not limited, and should include “signals . . . processed in any number of ways.” *Id.* at *61. Rejecting this argument, the court found that the patentee’s unbounded construction, which “could include [numerous] processes[,] clearly does not agree with the description of processed image signals provided in the patent specification.” *Id.* at *59-60. Because the specification consistently “support[ed] the conclusion that ‘processed image signals’ are those signals that have been compressed,” the court construed “processed image signals” to mean those “that are subjected to image compression.” *Id.* at *57-59, 63. Similarly here, the teaching that “processing” is limited to pulsed lasers defines the structure of “processed portions.”

The two cases Nichia cites for the proposition that “[a] novel product . . . is not limited to

the process by which it is made” do not contradict this result. *Supra* at 42-43. For instance, in *Vanguard Prods. Corp.*, 234 F.3d at 1372, the claim term recited two layers that were “integral.” *Id.* at 1371. Because this word was used “in its ordinary sense to mean formed as a unit” and provided the requisite structure standing alone, the court declined to read in a disclosed means of manufacturing. *Id.* at 1372-73. Similarly, in *Cont’l Circuits LLC*, 915 F.3d at 788, because the claim language was structurally complete standing alone and the specification “merely indicate[d] a preference for” one means of achieving a structure, the court declined to limit the claims to require that method of manufacturing. *Id.* at 799. By contrast, here the word “processed” standing alone does not impart structure to the claimed “processed portion.” Indeed, unlike “integral”—which intrinsically carries structural meaning—“processed” is merely a *reference* to that requires consideration of the disclosed pulsed laser processing to give meaning to this term.

VI. CONCLUSION

For the reasons set forth above, Plaintiff Nichia respectfully requests that the Court adopt its constructions of the disputed terms, and reject GVL’s efforts to read-in extraneous limitations.

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August 18, 2020